

PATENT APPLICATION  
00EC037/78111

I hereby certify that this paper is being  
submitted with the United States Postal  
Service as Express Mail in an envelope ad-  
dressed to: Assistant Commissioner for Pat-  
ents, Washington, D.C. 20231, on this date.

Date 8 FEB 2000 R. Hughes  
Express Mail Label No.  
EL131186047 US

1 PROVIDING CUSTOMER DATA TO AN  
2 AUTOMATIC CALL DISTRIBUTION SYSTEM AGENT

3 BACKGROUND AND SUMMARY

4 The present invention relates to providing customer data in  
5 an automatic call distribution (ACD) system.

6 ACD systems are typically used to distribute telephone calls  
7 among a group of agents of an organization. ACD systems may be  
8 used to distribute calls under any of a number of different  
9 formats. In a first instance, the term "call" may be used to  
10 refer to a request for communication received from (or placed  
11 through) a public switched telephone network (PSTN). A call may  
12 also be a voice path based upon packet data transferred through a  
13 computer network such as the Internet using web telephony.

14 Alternatively, a call may be any communication such as an e-mail,  
15 a facsimile, video, web-site inquiry received through the  
16 Internet, etc. Thus, ACD systems are transaction processing  
17 systems which typically handle one or more of a wide variety of  
18 these "call" types.

19 An organization often disseminates a single telephone  
20 number, URL or e-mail address to customers and to the public in  
21 general as a means of contacting the organization. As calls are  
22 directed to the organization from the PSTN or the Internet, the  
23 ACD system directs the calls to the organization's agents based  
24 upon some algorithm. For example, where all agents are  
25 considered equal, the ACD may distribute a call based on which

1 agent has been idle the longest time. Of course, there are many  
2 other possible ways to select an agent, or a subgroup of agents  
3 from whom an available one will be selected.

4 The ACD system can be provided with any number of routing  
5 mechanisms for establishing call paths between callers and  
6 agents. In some systems, a first path may be established through  
7 a circuit switched voice port, such as for calls from the PSTN.  
8 An alternative path may be a data link (such as over a Local Area  
9 Network (LAN)) such as for an e-mail received through a computer  
10 network such as the Internet. A data link also can be used to  
11 provide customer data to the agent. For example, such customer  
12 data can include contact information relating to the particular  
13 contact, such as a customer identifier provided by the customer  
14 in response to automatic inquiries. As another example, such  
15 data also can include previously stored information available  
16 from a database of the organization.

17 Control of the switching and communications with a database  
18 and with an external network such as a PSTN may, for example, be  
19 accomplished generally as described in U.S. Pat. Nos. 5,268,903  
20 and 5,140,611, both to Jones et al. which are hereby incorporated  
21 by reference. Routing of calls to agents may, for example, be  
22 accomplished generally as described in U.S. Pat. No. 5,335,269 to  
23 Steinlicht, U.S. Pat. No. 5,365,581 to Baker et al., and U.S.  
24 Pat. No. 5,400,327 to Dezonno, which are hereby incorporated by  
25 reference.

1 In existing systems, providing an agent with customer data,  
2 such as mentioned above, can require specialized application  
3 programs for agent computer terminals. In some instances, it can  
4 require disclosure of proprietary information to interface an ACD  
5 with network computers. In some cases, it can limit an  
6 organization to types of data and to a format built into  
7 purchased ACD systems.

8 In one embodiment of the present invention, use is made of  
9 browser application programs which now are readily available  
10 independent of an ACD system, and which are already commonly  
11 installed on many personal computers. Desired customer data and  
12 its format can be tailored to the organization's needs, and can  
13 be packaged as a web page. The ACD can provide a universal  
14 resource locator (URL) to a browser of the agent, which accesses  
15 the URL address at a server. The web page corresponding with the  
16 URL is provided by the server to the browser. The data can be  
17 displayed to the agent, regardless of the type of customer  
18 contact with the organization's ACD system.

19 The features of the present invention which are believed to  
20 be novel are set forth below with particularity in the appended  
21 claims. The invention, together with further advantages thereof,  
22 may be understood by reference to the following description in  
23 conjunction with the accompanying figures, which illustrate some  
24 embodiments of the invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a functional block diagram illustrating an embodiment of the invention.

Figure 2 is a flow chart illustrating the an embodiment of the invention.

## DETAILED DESCRIPTION

Figure 1 is a functional block diagram illustrating an embodiment of the invention. The contact between an external unit 11 and an organization's ACD 12 can be in any one or any combination of ways, such as through a public switched telephone network (PSTN), an internet network, a local area network, or other voice and/or data network. This contact can, for example, be a traditional inbound telephone call. Some other examples of types of contacts include web callbacks, e-mail contacts, and web chat contacts.

Upon receiving a contact from an external unit 11, the ACD 12 will process the contact by routing it to an agent. The agent can be one of a plurality of agents at a plurality of agent stations. Communication between ACD 12 and an agent can be any suitable communication link including, for example, a data link and/or a circuit switched telephone connection. It could be through a private network and/or a public network (particularly for a remote agent). It could include hardwire and/or wireless communications.

1 In the embodiment of Figure 1, the agent station comprises  
2 an agent personal computer 13 with a browser application program.  
3 A browser is software which translates the digital bits in a  
4 computer location to a medium which can be displayed meaningfully  
5 to the user such as written text. A web browser is an interface  
6 which allows display at a personal computer monitor of data  
7 located in a computer network. Web browsers are readily  
8 available and are commonly installed in personal computers today.

9 In the embodiment of Figure 1, the browser in the agent's  
10 personal computer 13 can access a server 14. Server 14 has  
11 access to one or more databases 15. In one configuration, the  
12 server 14 can be publicly accessible such as through the Internet  
13 and it also can, for example, be part of an intranet, or private  
14 computer network which uses Internet software and standards. It  
15 is common today for an organization to set up an intranet, in  
16 which access to at least certain data is limited to the  
17 organization or to parts of the organization.

18 The objective of providing data, relating to a particular  
19 contact, to the agent handling the contact can be accomplished  
20 using any over-the-counter browser on the agent's personal  
21 computer 13 without the need for specialized software. Figure 2  
22 is a flow chart illustrating an example of how this can be  
23 accomplished, regardless of the contact type.

24 As shown in Figure 2, ACD 12 can collect contact-derived  
25 information before a contact is routed to an agent. For example,  
26 in the case of a traditional telephone call, contact-derived

1 information such as a calling party number, a called party  
2 number, or an account number can be collected by the ACD 12. For  
3 purposes of discussion, calling party number is used to refer  
4 generally to information about the call originator which might be  
5 derived from the call being made. For example, ANI or automatic  
6 number identification can provide the billing number of the  
7 originating party. Caller ID can provide a telephone number and  
8 name of the originating telephone subscriber in many instances.  
9 This information can be collected by ACD 12 as soon as the  
10 telephone call arrives.

11 A called party number can be provided by DNIS or dialed  
12 number identification service. An organization can use one trunk  
13 group to serve a plurality of telephone numbers. Each number can  
14 be associated with a separate function, such as sales inquiries,  
15 customer technical service, account maintenance, internal use,  
16 and so forth. Consequently, the called party number can provide  
17 information about the purpose of the telephone call.

18 An account number, a product model number (such as for  
19 technical service assistance), or other information can be  
20 collected from the caller, such as by a VRU or voice response  
21 unit, through programmed scripts prior to the ACD 12 routing the  
22 call to an agent.

23 Similar contact-derived information can be collected by the  
24 ACD 12 regardless of the type of contact. For example, the  
25 source name and subject line of an incoming e-mail can be  
26 collected automatically by the ACD 12. In the case of a web

1   callback contact, the ACD could at a minimum collect the number  
2   it is calling back and the name of the person for whom the agent  
3   is supposed to ask when the callback is executed. A contact's  
4   computer address could be collected with a web callback or with a  
5   web chat contact.

6           As shown in Figure 2, ACD 12 also can add contact processing  
7   information, such as the type of contact, identification of the  
8   agent to whom the contact is being routed, or identification of  
9   the treatment given the contact (such as the programmed scripts  
10   used) which can affect the information which should be displayed  
11   to the agent.

12           Continuing with Figure 2, ACD 12 can attach the contact-  
13   derived information and/or the contact processing information  
14   mentioned above to a URL, or universal resource locator, which  
15   the ACD can send to the agent's personal computer 13. A URL is a  
16   string expression that at least constitutes a computer network  
17   address. Conventionally, a URL begins with a protocol method  
18   which a browser is to use when searching for the address. The  
19   most common protocol is http (hypertext transport protocol). The  
20   information which the ACD 12 can attach to the URL can be  
21   information which will be at least part of the data ultimately  
22   displayed to the agent. It also can be information used to  
23   identify other data which will be sought and packaged for  
24   display. For example, an account number collected by the ACD 12  
25   can be used to identify the account information which can then be

1 collected from a database 15 for display at the agent's personal  
2 computer 13.

3 In one embodiment, ACD 12 can send the URL to the browser on  
4 the agent's personal computer 13, without the need for any  
5 software relating to the ACD 12 on the agent's personal computer.  
6 In another embodiment, ACD 12 can send the URL to separate ACD  
7 console software on the agent's personal computer 13, and that  
8 separate software can provide the URL to the browser.

9 An organization can develop the type of information and  
10 format for information required by its agents. This can include  
11 information stored in a plurality of unrelated databases 15,  
12 including private information about particular customers stored  
13 in limited access locations. The format for this information,  
14 and/or instructions for obtaining at least some of the  
15 information, can be located on server 14. An organization can  
16 develop and set up what it desires on server 14, independent of  
17 hardware and software constituting the organization's ACD system  
18 12.

19 As mentioned above, the browser can be an ordinary over-the-  
20 counter software program, independent of the ACD system 12.  
21 Continuing with Figure 2, the browser can operate on the URL  
22 received from the ACD 12 just like the browser normally operates.  
23 The computer network address included in the URL from ACD 12 can  
24 be located in server 14. One or more web pages corresponding  
25 with the URL can be displayed to the agent via the browser in the  
26 agent's personal computer 13. The web page can be an HTML page.



1 HTML, or hypertext markup language, is a software language  
2 frequently used to create web pages. The web page can be a  
3 static page. The web page can include links for additional  
4 information. An organization can use more than one URL in  
5 connection with its ACD system 12. The particular URL, and the  
6 particular data in the corresponding web page, can depend on some  
7 of the contact information discussed above.

8 Server 14 can include instructions or programs necessary to  
9 set up the web page corresponding with the URL, to obtain the  
10 content or values of specified parameters, and to interface with  
11 any databases 15 to obtain required data. The URL to be sent by  
12 the ACD 12 can be configurable to correspond with what has been  
13 programmed in the server 14. However, the ACD 12 need only send  
14 the URL to the agent's personal computer 13. The ACD 12 need not  
15 constrain what is to be displayed to the agent, and need not be  
16 integrated with any interfaces necessary to obtain the desired  
17 data. The plurality of personal computers 13 of the plurality of  
18 agents only need ordinary over-the-counter browsers, and do not  
19 need other software application programs to interface with one or  
20 more databases 15 or to control the display of data.

21 The embodiments discussed and/or shown in the figures are  
22 examples. They are not exclusive ways to practice the present  
23 invention, and it should be understood that there is no intent to  
24 limit the invention by such disclosure. Rather, it is intended  
25 to cover all modifications and alternative constructions and

